Name: _____ Class: _____Due Date: _____

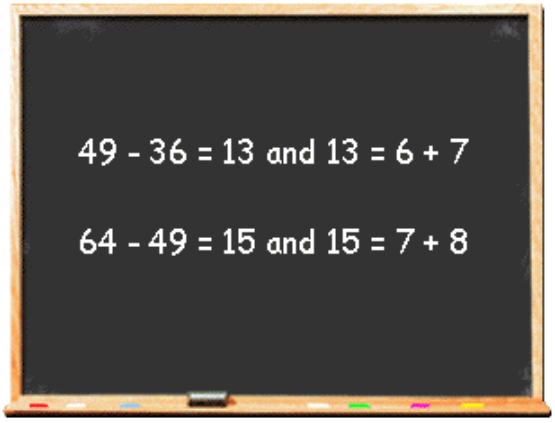
When solving the following problem, be sure to:

1) **Restate the <u>question</u>**
2) **State your <u>answer</u> in a complete sentence.**
3) **<u>List</u> facts and important information**
4) **<u>Explain</u> your solution strategy and include your <u>calculations</u>/work.**

Trevor's Theorem

Ms. Powers asked her class to look at a list of square numbers and see if they could find any interesting patterns. After a few minutes, Trevor raised his hand and said, "Ms. Powers, I think I've found something cool. If I take two consecutive squares and subtract them, the difference is always the sum of two consecutive integers."
"Show the class what you mean by that, Trevor," said the teacher.

Trevor wrote the following on the board:



Turning to the class, he said, "I call this 'Trevor 's Theorem.'"
Ms. Powers smiled and said, "Very good, but if you want to call it a theorem, you must be able to prove that it's true for every possible pair of consecutive square numbers. Can you do that using algebra?"
Trevor replied, "Oh yes, I can do that, too. Here's how."
What might Trevor have written on the board next?

Extra: Later, Trevor found a similar pattern for the difference of every other square, such as 49 - 25 or 64 - 36. What pattern involving a sum do you think he discovered this time?

Please answer the problem on a separate piece of paper. You must include all your calculations and an explanation of how you got your answer. Your paper will be scored in the following way:

- 4 The answer and the bonus are correct, you have included all your calculations, and the explanation is thorough and understandable.
- 3 The answer is correct, you have included all your calculations, and the explanation is complete and clear to the reader.
- 2 The answer is missing one of the items mentioned above.
- 1 The answer is incorrect, and the explanation or calculations are poor or missing.
- 0 Minimal or no effort was made to solve the problem.
- All late work is marked down a grade.